

4 1. A system for dynamic file allocation, comprising:
 an input device for receiving a data object; and
6 a reference container, coupled to the input device, for directing
 the data object to a location in a storage object, coupled to the reference
8 container, the reference container comprising:
 a publishing point which contains a virtual mapping system that
10 directs the data object to an entry in the storage object.

12 2. The system of claim 1, wherein the storage object is
 comprised of a plurality of data containers.

14 3. The system of claim 1, wherein the storage object is
16 comprised of one data container.

18 4. The system of claim 2, wherein the virtual mapping system
 comprises a reference object which is assigned to the data object and
20 indicates the address in the plurality of data containers where the data object
 is located.

22 5. The system of claim 4, wherein each data container in the
24 plurality of data containers comprises:
 a transfer space to temporarily store data objects being
26 relocated;
 a data space, coupled to the transfer space, to store the data
28 object; and
 an available space, coupled to the data space, containing
30 unused space.

32 6. The system of claim 5, wherein the publishing point
 comprises:

2 an import space for temporarily storing the data object;
a reference space, coupled to the import space, for storing the
4 reference objects and
an available space, coupled to the reference space, containing
6 unused storage in the publishing point.

8 7. The system of claim 6, wherein the data object is selected
from a group consisting of a byte, file and directory.

10 8. The system of claim 7, wherein the reference object is a set
12 of bits defining the location of the data object in the plurality of data
containers.

14 9. The system of claim 8, wherein each data container in the
16 plurality of data containers obtains storage from a storage pool.

18 10. The system of claim 9, wherein the each data container in the
plurality of data containers returns unused storage to the storage pool.

20 11. The system of claim 9, wherein the size of the storage pool
22 can be increased by adding more storage, and wherein power is not disrupted
in the file system.

24 12. The system of claim 11, wherein an operator sets a
26 maximum size to the each data container in the plurality of data containers.

28 13. The system of claim 12, wherein the operator sets a
relocation threshold on the each data container in the plurality of data
30 containers, which indicates when the data object is to be relocated from a first
data container in the plurality of data containers to a second data container in
32 the plurality of data containers.

2 14. The system of claim 13, wherein the relocation threshold is a
percentage of the maximum allowable size of the each data container in the
4 plurality of data containers.

6 15. The system of claim 9, wherein a new data container is
created if there is no storage space available in the plurality of data
8 containers

10 16. The system of claim 13, wherein the data object from the
first data container to be relocated is placed in the transfer space of the
12 second data container.

14 17. The system of claim 16, wherein the data object is relocated
from the first data container to the second data container without the
16 knowledge of an application running on the system.

18 18. The system of claim 2, wherein each data container in the
plurality of data containers is coupled to a container monitor to monitor that
20 the each data container in the plurality of data containers has adequate
available space.

22 19. The system of claim 18, wherein a mode manager, coupled
24 to the publishing point, maintains all internal data structures tracking the
publishing point, the plurality of data containers and the data object.

26 20. The system of claim 19, wherein a relocater is spawned by
28 the mode manager to assist with the relocation of the data object.

30 21. A method of dynamically allocating a data object in a file system,
the method comprising the steps of:
32 detecting the data object in a data space of a source data container to
be relocated;

2 copying the data object to the transfer space of a target container; and
transferring the data object from the transfer space of the target data
4 container to the data space of the target data container.

6 22. The method of claim 21, further comprising the steps of:
updating the reference object to indicate the address of the data object
8 in the target data container; and
storing the reference object in the publishing point.

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23. The method of claim 22, wherein the reference object is stored in a
12 reference space within the publishing point.

14 24. The method of claim 23, further comprising the step of spawning a
relocator to manage the transfer of the data object from the source data
16 container to the target data container.

18 25. The method of claim 24, wherein the relocator updates the
reference objects.

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26. The method of claim 25, further comprising the steps of:
22 verifying the copy of the data object in the source data container is
identical to the data object in the target data container;
24 moving the data object in the data space in the source data container
to the transfer space in the source data container; and
26 removing the data object from the transfer space of the source data
container to increase available space in the source data container for
28 additional data objects.

30 27. The method of claim 26, wherein the relocator moves the data
object in the source data container to the transfer space and then removes
32 the data object from the source data container.

2 28. The method of claim 27, wherein a mode manager cycles through
the source data container and the target data container to test for a relocation
4 threshold.

6 29. The method of claim 28, wherein an operator sets a time interval
to test the relocation threshold.

8 30. The method of claim 28, further comprising the step of building a
10 list of data objects from the source data container to relocate to the target
data container, wherein data objects are put onto the list if the source data
12 container has reached its relocation threshold.

14 31. The method of claim 30, wherein the data object that is relocated
is of sufficient size to cause the source data container to drop below its
16 relocation threshold.

18 32. The method of claim 31, further comprising the step of increasing
the size of the source data container by obtaining additional space from a
20 storage pool.

22 33. The method of claim 32, wherein the mode manager determines
where to relocate the data object and spawns the relocater to assist in the
24 relocation.

26 34. The method of claim 33, wherein the mode manager polls the
import space of the publishing point for the data object to be relocated and
28 wherein the operator sets a time interval for polling the import space.

30 35. The method of claim 33, wherein the data object is relocated to
multiple data containers if the size of the data object is too large to fit into a
32 single data container.

2 36. A method of dynamically allocating a data object in a file system,
the method comprising the steps of:
4 entering the data object into an input device;
storing the data object in a publishing point;
6 assigning a reference object to the data object; and
relocating the data object to a transfer space of a data container
8 chosen from a plurality of data containers.

10 37. The method of claim 36, wherein the data object is stored in an
import space of the publishing point, and wherein additional storage space is
12 acquired from an available space of the publishing point if there is not enough
space in the import space.

14 38. The method of claim 37, wherein the reference object indicates
16 the address in the data container where the data object is stored.

18 39. The method of claim 38, wherein the reference object is
transferred from the import space of the publishing point to the reference
20 space of the publishing point.

22 40. The method of claim 39, further comprising the step of spawning a
relocator to assist in the storing of the data object.

24 41. The method of claim 40, wherein the mode manager spawns a
26 relocator to assist in relocating the data object from the import space of the
publishing point to the transfer space of the data container.

28 42. The method of claim 41, wherein the mode manager spawns a
30 container for each container in the plurality of data containers.

32 43. The method of claim 42, wherein the mode manager cycles
through the each container in the plurality of data containers to test for the

2 relocation threshold.

4 44. The method of claim 43, wherein an operator sets a time interval
to test the relocation threshold.

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45. The method of claim 44, further comprising the steps of:
8 moving the data object from the transfer space of the data container to
the data space of the data container; and
10 updating the reference object with the address of the data object in the
data container.

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46. The method of claim 45, wherein the data object is relocated to
14 multiple data containers if the size of the data object is too large to fit into a
single container.

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47. The method of claim 46, wherein the mode manager polls the
18 import space of the publishing point for the data object to be relocated and
wherein the operator sets a time for polling the import space.

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